

toms, so far as it is possible to judge, resembling those in man, at any rate with identical changes found in the brain after death. The problem of the nature of the disease was thus solved in a very short space of time by this brilliant piece of work.

Of the treatment of sleeping sickness there is nothing to be said. No drug or other mode of treatment has any effect; the disease is always fatal. It is possible that in prevention more hope may be put; for the tsetse flies frequent thick jungle and shun open ground. A complete study of their habits will be necessary before one can express a definite opinion; but here, as in the problem of mosquito extermination, the task will probably be no easy one.

The illustrations represent (Fig. 1) trypanosomes from a case of sleeping sickness, after Bruce; (Fig. 2) a tsetse fly (*Glossina palpalis*) \times 3, after Austen.

J. W. W. STEPHENS.

RADIO-TELLURIUM.

ACCORDING to a Press account of a recent lecture in Vienna, Prof. Marckwald illustrated in many striking and novel ways the intense activity of the body isolated by him from the Joachimsthal pitchblende and named radio-tellurium. The ionisation of the air in the immediate vicinity of the active substance is so intense that a current sufficiently strong to ring an electric bell was enabled to pass through it, the air forming part of the circuit. If a sheet of paper is interposed to screen the air from the rays of the preparation the effect ceases immediately and the bell stops ringing. Leyden jars were discharged without sparking by the substance, and other evidences of its great discharging power shown. All these effects were produced by a few hundredths of a milligram of the substance. Even the most active preparations of radio-tellurium, it is stated, are not self-luminous.

Prof. Marckwald obtained less than four milligrams of his substance from two tons of pitchblende. At first electrolytic methods were employed, but afterwards it was found that the active substance is completely deposited on a plate of bismuth or copper immersed for some days in the solution. The actual deposit consists almost entirely of ordinary tellurium, which possesses the power, so common in similar cases, of carrying down with it during the deposition the minute trace of active matter which is responsible for the radio-activity. The active constituent is separated from the tellurium by precipitating the solution with hydrazin hydrate. The tellurium precipitated is inactive, and the new body remains in the solution.

Prof. Marckwald is, however, alone in considering it to be a new substance. The radiations from it consist only of the α or non-penetrating variety, and this is the characteristic feature of polonium, discovered by Mme. Curie, who has protested against the name radio-tellurium being given to the body described by Prof. Marckwald. The activity of polonium, however, gradually decays, diminishing to half-value in about a year, whereas Prof. Marckwald states that the activity of his body is permanent. He also states, however, that the α radiation of the body is so powerful that he obtained sufficient light by the impact of the rays on a screen of phosphorescent zinc sulphide to be plainly visible to an audience of several hundred people. These two statements seem to be physically irreconcilable according to our present knowledge of the nature of the α rays, and it is to be hoped that Prof. Marckwald will give some account of the measurements by which he has concluded that the activity of radio-tellurium is permanent. Without in any way detracting from the

merit of his splendid researches on the nature of the active substance, most men of science will agree with Mme. Curie in protesting against a new name being given to it in the present state of our knowledge. The practice of rechristening well-known bodies and sending them back to the country of their origin with new names and as new discoveries, which seems to be prevalent among some German organic chemists, would, if adopted in the case of the radio-active bodies, lead to the recognised number being exactly doubled.

FREDERICK SODDY.

NOTES.

THE article on the new education authority for London, which we print elsewhere in this issue, directs attention to a matter of vital importance to the educational interests of London. The County Council has approved a scheme by which the Education Committee concerned with the whole of the work of secondary education in London is to be made up practically of county councillors, without any persons possessing expert knowledge of science, art, literature, or education upon it, selected from outside the council. This committee, if approved by the Board of Education, would differ from the educational authorities appointed by county councils in most parts of the country, and appears contrary to the intentions of the Act under which it is constituted. Doubtless expert opinion will be obtained by the council, but the danger is that a committee constituted like that proposed for London may not know when expert guidance is necessary, and can certainly not be in sympathetic touch with all the lines along which educational progress should be made. The only way by which the interests of higher education in London can be satisfactorily represented is by the appointment of persons with special knowledge upon the committee; and by neglecting this factor of success in order to avoid the sectarian difficulty which might be involved in the selection of men and women outside the council to serve upon the committee is in our opinion a serious mistake.

THE gold medal of the Royal Astronomical Society has this year been awarded to Prof. G. E. Hale, director of the Yerkes Observatory, for his method of photographing the solar surface and other astronomical work. The president of the society, Prof. H. H. Turner, will deliver the address at the anniversary meeting on Friday, February 12. The American Ambassador will be present at the meeting, and receive the medal on behalf of Prof. Hale.

THE sudden death of Mr. W. G. McMillan, the secretary of the Institution of Electrical Engineers, announced last week, will be widely regretted. Mr. McMillan was laid up with a chill a short time ago, which developed into an attack of pleurisy, but he seemed to be well on the way to recovery when his sudden death from heart failure took place on January 31. Mr. McMillan, after a distinguished career at King's College, was appointed to a post under the Indian Government as chemist and metallurgist to the Ordnance Factories near Calcutta. This position he held for five years, and on his return to England he was elected to the lectureship in metallurgy at Mason College, Birmingham, which position he held until 1897, when he was appointed secretary of the Institution of Electrical Engineers. Mr. McMillan has written largely on electro-metallurgical subjects, his "Treatise on Electrometallurgy" and his translation of Dr. Borcher's "Electrometallurgy" being the standard English works on this branch; he recently contributed the articles on electrochemistry and electrometallurgy to the new volumes of the

"Encyclopædia Britannica." As secretary of the Institution of Electrical Engineers he not only showed a remarkable power of hard work and organisation, but endeared himself to its members by his unfailing courtesy in a way that will make them all feel his loss as that of a personal friend.

THE lecture at the Royal Institution to-morrow, February 12, will be delivered by Mr. W. N. Shaw, F.R.S., on the subject of "Some Aspects of Modern Weather Forecasting."

SATURDAY last, February 6, was the hundredth anniversary of the death of Joseph Priestley, philosopher and divine. In Leeds the event was suitably commemorated by the congregation of Mill Hill Chapel, where Priestley was minister for some six years, and also by the Priestley Club. The members of the club, to the number of fifty, dined together, and the president, Dr. T. E. Thorpe, C.B., F.R.S., afterwards gave a public address on "The Life and Work of Joseph Priestley" in the Philosophical Hall. At Warrington the same day Dr. Thorpe unveiled a memorial tablet at the house which Priestley occupied during his stay in that town.

THERE appears to be no longer any doubt as to the presence in Lake Victoria Nyanza of medusæ indistinguishable from those of Lake Tanganyika, and the fact cannot be without its effect upon the acceptance of the view put forward by Mr. J. E. S. Moore that the fauna of Lake Tanganyika differs from that of the other East African lakes in alone possessing evidences of a marine origin. On December 1, 1903, Prof. Ray Lankester exhibited at the Zoological Society some medusæ from Victoria Nyanza obtained by Mr. Hobley on August 31, 1903, and sent to London by Sir Charles Eliot. A doubt being raised by some supporters of Mr. Moore's theory as to these medusæ having really come from Lake Victoria and not from Lake Tanganyika, Sir Charles Eliot, in a letter dated Mombasa, December 20, 1903, wrote to Prof. Lankester saying that the medusæ were collected by Mr. Hobley himself in the Kavirondo Gulf, by the side of which the railway terminus is situated, and that the water was full of them. Mr. Hobley, at the request of Sir Charles Eliot, had endeavoured to study the life-history of the medusæ, but he failed to keep them alive for more than a few days. The specimens sent to London were said by Mr. R. T. Günther to be indistinguishable from the *Limnocnida tanganyicae* of Lake Tanganyika. It is interesting in this connection to note that the Victoria medusæ were discovered quite independently in the same locality (Kavirondo, in the Kisumu district), and apparently at about the same time of year. According to *Globus* (January 28, p. 84), M. Ch. Alluaud, on the day of his arrival at Lake Victoria, discovered a marine medusa similar to that of Lake Tanganyika, and communicated an account of his discovery to the Paris Geographical Society on September 19, 1903.

THE weekly weather report, dated January 30, issued by the Meteorological Council, which gives the total rainfall from January 3, shows that the amount has been above the average in all districts except the east of Scotland and north-east of England, the greatest excess being in the Channel Islands. Dealing with the calendar month and with individual stations, the excessive rainfall was very marked. At Blackrod Point, in the north-west of Ireland, the fall amounted to 7.93 inches on thirty days (3.18 inches above the average). At Dunrossness (Shetlands) rain was measured every day, but the excess was only 1.40 inches. In the north-west of England there were considerable

differences, e.g. Holyhead had 4.37 inches, but Liverpool only 2.08 inches. In the south-east of England the excess amounted to about 0.6 inch; at Greenwich rain fell on twenty-two days, the total amount being 2.51 inches.

VERY high tides were expected in the ordinary course on the coasts of the British Isles and France last week, but owing to a combination of other circumstances there was a phenomenal intensification of the tidal wave. Early in the morning of February 2 the tide had reached a dangerously high level round the Scilly Isles, and later our western coasts, as far north as the Irish Sea, were similarly affected; also the western half of the English Channel and the coast of Brittany. On the following day there was an abnormally high tide along the eastern half of the Channel, and even as far north as Dunbar, on the Firth of Forth, there was considerable damage attributed to the same cause. Tidal rivers, like the Thames, overflowed their banks, there being, in addition to the exceptionally high tides, an immense volume of fresh water brought down from the inland districts, where on several successive days rain had fallen heavily and laid vast tracts of country under water. The great height of this spring tide is doubtless largely due to the rather deep cyclonic depression which was signalled off our south-western coasts on February 1. On the morning of February 2 its centre was close to Scilly, where the barometer had fallen below 29 inches, or an inch below the normal, a deficiency of pressure which of itself would account for a considerable increase in the height of the water. Moving slowly into the English Channel, the centre was, on the morning of February 3, situated between Torquay and Portland, and by the following morning it had passed across the south-east of England to the Yorkshire coast, where it filled up subsequently. The official weather reports indicate that the disturbance caused comparatively little wind, there being few records of so much as a moderate gale.

THE death is announced of the Baron de Ujfalvy, known for his anthropological researches and his travels in Central Asia.

REPORTS have reached us of the discovery of a human skeleton in cave-earth at Cheddar. As relics of various ages are entombed in the Mendip cavern-deposits, we hope that the evidence will be carefully scrutinised, and that it may be possible to determine the age of these human remains.

A REUTER message from Amsterdam states that a telegram from the Governor of the Dutch East Indies, dated February 4, reports an eruption of the volcano Merapi, in the district of Klaten, accompanied by a rain of red-hot stones. Twelve people were burned to death and twenty severely injured.

A SLIGHT earthquake shock was recorded at the Liverpool Observatory, Bidston, on February 1 at 3.25 a.m. On February 2 several people felt distinct shocks of earthquake in Jersey. Between 4 a.m. and 6.45 a.m. six slight shocks were experienced, and crockery and windows rattled and furniture was shaken. Prof. Milne informs us that his records do not show any traces of disturbances corresponding to the shocks at Jersey, which therefore must have been local and very small.

THE silver medal of the Bavarian Academy of Munich has been awarded to Dr. Rudel, of Nuremberg, for his work on climatology.

THE deaths are announced of Prof. A. Edmund Hess, professor of mathematics at Marburg, and of Dr. Christian Heinzerling, formerly lecturer at Darmstadt.

ACCORDING to the *Physikalische Zeitschrift*, Prof. Curie has declined the Cross of the Legion of Honour on the ground of the important part played by his wife in the discovery of radium.

ITALIAN chemists propose to commemorate the seventieth birthday of Prof. Ugo Schiff, of Florence, who has worked for forty years in Italy. Dr. Guido Bargioni, 111 Via Aretina, Florence, has been entrusted with the arrangements.

At a meeting of the French Physical Society on January 15 the following officers were elected:—vice-president, Prof. H. Dufet; vice-secretary, Prof. Langevin; ordinary members of council (elected for three years), Madame Curie, M. Hamy, Dr. Marage, M. Perrin; non-resident members, Prof. Blaserna (Rome), M. Maurin (Rennes), Prof. Miculescu (Bucharest), Prof. Tissot (Brest). M. d'Arsonval occupies the presidential chair in succession to M. C.-M. Gariel.

THE Municipal Council of Paris has adopted a proposal of M. Bussat for the foundation of a laboratory of applied physiology. M. Bussat has himself sketched out a scheme of the work which should be undertaken in such a laboratory, relating to the alimentary value of foodstuffs, muscular work, intoxication, &c., and he suggests that the director should give publicity to the work of the laboratory by means of courses of lectures addressed to the pupils of the professional and normal schools of Paris.

REFERRING to a suggestion made by "R. F. M." in last week's NATURE (p. 318), in the course of a letter on scientific uses of the kinematograph, Mrs. D. H. Scott sends us a copy of her paper "On the Movements of the Flowers of *Sparmannia africana*, and their Demonstration by Means of the Kinematograph," published in the *Annals of Botany* of September, 1903. The paper was noticed in our issue of November 26, 1903 (vol. Ixix, p. 90).

WE have received a copy—presumably a corrected printer's proof—of a pamphlet in which Mr. W. H. Parkes proposes to deal with the "Cause of Gravitation and the Mechanism of the Universe." A sufficient indication of the character of the paper is afforded by the two opening sentences, which we here reproduce:—"Anything that is moved into an egg-shaped curve or path by external force thereby becomes attractive. This, I believe, is the cause of the universal force called gravitation, and I think it should be proved by experiments which I am not in a position to carry out."

IN the course of a paper on the land and fresh-water molluscs of Mexico, published in the *Proceedings* of the Philadelphia Academy for December, 1903, Mr. H. A. Pilsbry records from that area the remarkable slug-like snail, *Metostracon mima*, first described from Michoacan in vol. iv. of the *Proceedings* of the Malacological Society of London.

WE have received a copy of a "Guide to the Horniman Museum and Library," London Road, Forest Hill, issued by the London County Council. The manner in which this little book is drawn up strikes us as being admirably suited to the purpose for which it is intended, and in general the information appears trustworthy. On p. 31 we note, however, the statement that the duck-mole alone of the monotremes has a marsupial pouch, which is obviously an error, since the structure in question attains its fullest development in the echidna, and should be described as a mammary pouch.

WE have received from Mr. W. M. Brewer a paper on the rock-slide at Frank, Alberta Territory, Canada (*Trans. Inst. Mining Eng.*, Newcastle-on-Tyne, 1903). This enormous landslip or rock-slide occurred on April 29, 1903, overwhelming the coal-mining town of Frank, which was situated at the base of Turtle Mountain. Prior to the catastrophe, that mountain reached an altitude of about 3500 feet above the neighbouring Old Man or Crow's Nest river valley. Subsequently it was found that the summit had been lowered by about 1000 feet, and that from sixty to eighty million tons of rock must have been precipitated. One immense mass, estimated at fifteen thousand tons, was moved to a distance of two miles (see Fig. 1). Indeed, the débris was scattered over an area of nearly two square miles. The base of Turtle Mountain consists of Cretaceous shales and sandstones, in which a 10-foot seam of coal has been extensively worked. The mass of the mountain is formed of Carboniferous limestone. The plane of separation between the two series is a thrust-fault along which the limestone-beds are highly contorted and shattered. Above, the limestone rose in a precipitous face overlooking the town of Frank, and it presented a threatening appearance before the rock-slide took place. It seems evident that the stability of the mountain had been weakened by the



FIG. 1.—View of Boulder weighing 15,000 tons.

mining operations at its base. For the past two or three years about 200 tons of coal per day have been worked out, so that the area was honeycombed with tunnels, while the main level is reported to have been driven for nearly 5000 feet parallel to the stratification of the rocks. Thus the towering mass of limestone, which is traversed by many joint-planes, was weakened, and a vast portion of the summit that had for ages been subject to the weathering influence of heavy snowfalls, frosts and rains, suddenly gave way and caused the disaster.

A THIRD edition of Mr. W. T. Lynn's "Astronomy for the Young" has been published by Messrs. Sampson Low, Marston and Co., Ltd.

MESSRS. J. AND A. CHURCHILL have published a third edition of "A Manual of Botany," vol. i., Morphology and Anatomy, by Prof. J. Reynolds Green, F.R.S.

WE have received from M. G. E. C. Gad, of Copenhagen, a copy of "Annales de l'Observatoire Magnétique de Copenhague," edited by Herr Adam Paulsen, the director of the Meteorological Institute of Denmark. The publication contains the hourly values of the magnetic elements for the years 1899 and 1900.

THE February number of the *Geographical Journal* contains several articles of exceptional importance and interest. Sir Thomas Holdich writes on the Patagonian Andes, giving a valuable summary of his recent work in connection with the Chile-Argentina Boundary Arbitration. A paper by Prince Kropotkin, of which the first part is here published, throws much new light on "The Orography of Asia." Dr. Otto Nordenskjöld and Dr. Gunnar Andersson contribute an account of the work of the Swedish Antarctic Expedition. The completed paper "On a Flat Model which Solves Problems in the Use of the Globes," by Prof. Everett, gives a number of interesting results in addition to those contained in his letter to NATURE of July 30, 1903.

We have received a copy of a paper by Dr. P. T. Austen, reprinted from the *Scientific American* Supplement, and bearing the title "The Chemical Factor in Human Progress." The reader will find the influence of chemical knowledge upon the development of the industries, of agriculture, of sanitation, &c., discussed in a very interesting manner, and the pamphlet is well worthy of notice.

We have received a copy of a German pamphlet by B. Kolbe the object of which is to show the manifold applicability of the differential thermoscope and a six-fold manometer in experimental demonstrations of the phenomena and laws of heat. Thirty important experiments are described which can be carried out with the aid of these instruments, and excellent illustrations of the method of demonstration are given.

THE report of the International Committee on Atomic Weights has just been issued, and only two changes are recommended from the table of values for 1903. The value for caesium has been changed to 132.9, and that for cerium to 140.25 ($O=16$). The report directs attention to the inadvisability of using glass vessels in experimental atomic weight determinations, and suggests the use of vessels of pure silica, so-called quartz-glass, in all such investigations. A redetermination of the atomic weights of gallium, indium, columbium, tantalum, mercury, tin, bismuth, antimony, palladium, vanadium, phosphorus, and silicon is regarded as necessary.

In the December (1903) *Sitzungsberichte* of the Vienna Academy of Sciences, Prof. C. Doelter describes a form of crystallisation microscope adapted to the determination of the melting points of silicates and silicate mixtures. The attainment of high temperatures is effected by means of a small electric oven, 5 centimetres high, mounted on the object stand, and in the apparatus described a temperature of 1200° C. can be reached. The distance between the object and objective during the observation is about 27 millimetres, and by a special arrangement of asbestos plates and a spiral tube carrying ice-cold water the microscope and the objective can be kept quite cool, even when the substance under examination is subjected to a temperature of about 1200° C.

In vol. xlv. of the *Zeitschrift für physikalische Chemie* Dr. E. Baur describes some interesting experiments on colour-sensitive silver chloride. Mixtures of the chloride and of the subchloride Ag_2Cl prepared by treatment of colloidal silver solutions with insufficient chlorine water were mixed with about 5 per cent. of gelatin. Plates prepared with the product so obtained give the spectrum in its natural colours after one hour's exposure. The phenomenon is independent of the relative amounts of chloride and subchloride in the mixture. The author inclines to the view that several colour-sensitive forms of the subchloride exist, which are transformed into one another under the influence of the different spectral rays.

. 1789, VOL. 69]

THE first number of the *British Journal of Psychology*, edited by Prof. James Ward and Dr. W. H. R. Rivers, has been published by the Cambridge University Press. The scope of the *Journal* is already known from the circular previously issued; it comprises psychology in the widest sense of the term, and is pledged to "side with no school and have no predilections"; it is not a "periodical," it has no fixed time of publication; it is rather designed to be a medium for the production of original articles and reports of experimental work. The contents of the present, presumably typical, number include an article on "The Definition of Psychology," by Prof. Ward; a sketch of Telesio's psychology, by J. Lewis McIntyre; and two important contributions on the experimental psychology of vision, by Prof. C. S. Sherrington and Prof. W. McDougall. The juxtaposition of Telesio and the experimental psychologists is itself a lecture on that progress which this *Journal* will assuredly support and stimulate.

THE additions to the Zoological Society's Gardens during the past week include a Ring-necked Parrakeet (*Palaeornis torquatus*) from India, presented by Miss M. Bull; four Hybrid Silver Pheasants (between *Euplocamus nycthemerus* and *Phasianus colchicus*), presented by Mr. H. S. Gladstone; two Black-headed Lemurs (*Lemur brunneus*) from Madagascar, presented by Mr. H. C. Jenkins; a Tayra (*Galictis barbara*) from South America, a Vulpine Phalanger (*Trichosurus vulpecula*) from Australia, a Levaillant's Amazon (*Chrysotis levaillanti*) from Mexico, a Malabar Parrakeet (*Palaeornis peristeroides*), three Hardwick's Mastigures (*Uromastix hardwickii*) from India, a Pennsylvanian Mud Terrapin (*Cinosternum pennsylvanicum*) from North America, deposited; a Racket-tailed Parrot (*Prioniturus platurus*), an Everett's Thick-billed Parrakeet (*Tanygnathus everetti*) from the Philippine Islands, two Red Lories (*Eos rubra*) from Moluccas, two Blue-streaked Lories (*Eos reticulata*) from Timor Laut, a Tabuan Parrakeet (*Pyrrhulopsis tabuan*) from the Fiji Islands, two Wonga-wonga Pigeons (*Leucosarcia picata*) from New South Wales, purchased.

OUR ASTRONOMICAL COLUMN.

REPORT OF THE HARVARD COLLEGE OBSERVATORY.—In the forty-eighth annual report of the Harvard College Observatory, Prof. E. C. Pickering, the director, again directs attention to the urgent need for cooperation in the study of the greater unsolved astronomical problems, and indicates the methods of procedure whereby the greatest results might be obtained from the least expenditure. In the solution of many of these problems the numerous photographs already obtained at Harvard would, if the funds necessary for their reduction were forthcoming, be of inestimable value.

The body of the report deals with the work accomplished during the year ending September 30, 1903, the observations made with each instrument being treated separately.

More than 15,000 photometric light comparisons have been made with the East equatorial, the computed error of each set of sixteen settings only amounting to three or four hundredths of a magnitude. Photometric measurements of the light of Jupiter's satellites, whilst undergoing eclipse, have been made during fifteen eclipses. The variability of some 2000 stars, suspected by other observers, has been definitely determined, and it is estimated that the time of minimum of Algol variables can be determined to within two minutes with this instrument.

The director has made 71,992 settings of the 12-inch meridian photometer during 143 nights, and by interposing a shaded glass has found it possible to compare magnitudes of such widely different orders as those of Sirius and a twelfth magnitude star. Another modification of this instrument permitted the light of the sky during the daytime, at twilight, and at night, the brightness of various portions